

CLAIMS

What is claimed is:

1. A process for preparing a processed sample liquid solution for electrophoresis, comprising the steps of:

5 (a) treating a sample comprising a cell suspension in a non-shearing manner to produce a processed sample liquid solution comprising a mixture of DNA fragments extracted from said cell suspension, wherein at least one of said DNA fragments is greater than 200 kilobase pairs; and

10 (b) transferring said processed sample liquid solution in a non-shearing manner directly to an electrophoresis medium for conducting electrophoresis.

2. The process of Claim 1 wherein said cell suspension comprises one or more cells suspended in a lysis buffer.

15 3. The process of Claim 1 wherein said cell suspension is a bacterial cell suspension.

4. The process of Claim 1 wherein said treating comprises subjecting said cell suspension to lysis, deproteinization, and digestion.

20 5. The process of Claim 4 wherein said lysis and deproteinization comprises treatment with the enzyme achromopeptidase.

6. The process of Claim 4 wherein said digestion comprises treatment with a restriction enzyme.

7. The process of Claim 6 wherein said restriction enzyme is selected from the group consisting of XbaI, SfiI, SmaI, NotI, ApaI, and AscI.

25 8. The process of Claim 1 wherein said DNA fragments are 50 kilobase pairs to 1000 kilobase pairs.

9. The process of Claim 1 wherein said step (a) is automated.

10. The process of Claim 1 wherein said step (b) is automated.

11. The process of Claim 1 wherein said steps (a) and (b) are automated.

30 12. The process of Claim 1 wherein said electrophoresis medium is an electrophoresis gel.

13. The process of Claim 1 wherein said electrophoresis medium is a well of an electrophoresis gel.

35 14. The process of Claim 1 wherein said electrophoresis medium is a viscous sieving solution.

15. A process for separating a mixture of DNA fragments extracted from a cell suspension, comprising the steps of:

- (a) treating a sample comprising a cell suspension in a non-shearing manner to produce a processed sample liquid solution comprising a mixture of DNA fragments extracted from said cell suspension, wherein at least one of said DNA fragments is greater than 200 kilobase pairs;
- (b) transferring said processed sample liquid solution in a non-shearing manner directly to an electrophoresis medium; and
- (c) separating said mixture of DNA fragments by conducting electrophoresis.

16. The process of Claim 15 wherein said cell suspension comprises one or more cells suspended in a lysis buffer.

17. The process of Claim 15 wherein said cell suspension is a bacterial cell suspension.

18. The process of Claim 15 wherein said DNA fragments are 50 kilobase pairs to 1000 kilobase pairs.

19. The process of Claim 15 wherein said step (a) is automated.

20. The process of Claim 15 wherein said step (b) is automated.

21. The process of Claim 15 wherein said steps (a) and (b) are automated.

22. The process of Claim 15 wherein said electrophoresis medium is an electrophoresis gel and said electrophoresis is pulsed-field gel electrophoresis.

23. The process of Claim 15 wherein said processed sample liquid solution is transferred to a well of said electrophoresis medium.

24. The process of Claim 15 wherein said electrophoresis is pulsed-field capillary electrophoresis.

25. The process of Claim 15 wherein said treating comprises subjecting said cell suspension to lysis, deproteinization, and digestion.

26. The process of Claim 25 wherein said lysis and deproteinization comprises treatment with the enzyme achromopeptidase.

27. The process of Claim 25 wherein said digestion comprises treatment with a restriction enzyme.

28. The process of Claim 27 wherein said restriction enzyme is selected from the group consisting of XbaI, SfiI, SmaI, NotI, ApaI, and AscI.